

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1-23 are pending in the present application. Claims 1, 4, 6, 10, 14, 16, 18, and 22 are amended by the present amendment.

In the outstanding Office Action, Claims 6-9, 14, 15, and 18-21 were objected to; Claims 1-3, 10-12, and 22 were rejected under 35 U.S.C. § 102(b) as anticipated by Kobayashi (U.S. Patent no. 5,144,615); Claims 4, 6, 16, and 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi in view of Izumi et al. (U.S. Patent No. 5,598,392, herein “Izumi”) or Horibe et al. (U.S. Patent No. 5,598,396, herein “Horibe”); Claims 5, 9, 17, and 21 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi, Izumi, and Nagaai (JP Patent No. 60187933 A); Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi in view of Iwasaki et al. (U.S. Patent No. 5,761,179, herein “Iwasaki”); Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi in view of Kasami et al. (U.S. Patent No. 6,312,780, herein “Kasami”); and Claims 13 and 15 were indicated as allowable if rewritten in independent form.

Applicants thank the Examiner for the indication of allowable subject matter and for the courtesy of an interview extended to Applicants’ representative on July 9, 2004. During the interview differences between the claims and the applied art were discussed. Further, claim amendments clarifying the claims over the applied art were discussed. The present response sets forth those discussed claim amendments. Arguments presented during the interview are reiterated below.

Regarding the objection to Claims 6-9, 14, 15, and 18-21, those claims are amended as suggested in the outstanding Office Action without adding new matter. Accordingly, it is respectfully requested this objection be withdrawn.

Claims 1-3, 10-12, and 22 were rejected under 35 U.S.C. § 102(b) as anticipated by Kobayashi. That rejection is respectfully traversed.

Independent Claim 1 is amended to recite “means for applying at least two laser beams having different power levels to form said at least one recording mark, and for varying a power level of one of the at least two laser beams to form the plurality of recording mark units.” Independent Claims 10 and 22 are amended similar to Claim 1. The claim amendments find support, for example, in the specification at page 21, line 6, to page 22, line 3. No new matter is believed to be added.

Briefly recapitulating, independent Claim 1 is directed to an information recording apparatus that includes a power level modification unit that modifies a power level of a laser beam into two or more power levels, and a unit that applies at least two laser beams having different power levels to form at least one recording mark and that varies a power level of one of the at least two laser beams to form a plurality of recording mark units.

In a non-limiting example, Figure 1 shows the power level modification unit 22 and the applying unit 21. In another non-limiting example, Figure 3 shows the laser beams Pw and Pe having different power levels and also the power of the Pe laser beam varying from a first power level 2011, to a second power level 2012, and to a third power level 2013 for different mark units.

By controlling a power level of one laser beam of the at least two laser beams, the device of Claim 1 advantageously controls a position of a rear edge of a mark unit.¹

Turning to the applied art, Kobayashi shows in Figure 2 a pulse-power modulating circuit 104 capable of modifying a power level of a *single* laser beam. However, as discussed during the interview, Kobayashi does not teach or suggest applying *at least two laser beams*

¹ Specification, page 21, second full paragraph.

having different power levels to form at least one recording mark and varying a power level of one of the at least two laser beams to form a plurality of recording mark units as recited in independent Claims 1, 10, and 22. On the contrary, Kobayashi uses a ***single*** laser beam with various power levels and pulse widths to produce a recording mark, as shown in Figure 5.

Accordingly, it is respectfully submitted that independent Claims 1, 10, and 22 and each of the claims depending therefrom patentably distinguish over Kobayashi.

Claims 4, 6, 16, and 18 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi in view of Izumi or Horibe. That rejection is respectfully traversed.

Independent Claims 4 and 16 recite, *inter alia*, that a reproducing unit reproduces recording marks based on reference clock signals such that a timing of detecting a mark edge of each of the recording marks and a timing of detecting an intensity of a reflection light from each of the recording marks are different. In a non-limiting example, Figure 3 shows that the timing 2035 for detecting the mark edge is different than the timing 2036 for detecting the intensity of the recording mark.

By detecting the intensity and the mark edge of a recording mark at different times, the apparatus of Claims 4 and 16 is able to read multi-leveled signals corresponding to different recording marks.²

The outstanding Office Action recognizes at page 5, lines 15-17, that Kobayashi “remains silent whether a timing of detecting the mark edge of each of said recording marks and a timing of detecting the intensity of a reflection light from each of said recording marks are different.”

The outstanding Office Action relies on Izumi or Horibe to teach those features. Izumi shows in Figure 7 that a leading edge signal 7 and a trailing edge signal 8 are integrated into a composite data 9, and then a reproduction data signal 11 is output.

² Specification, page 5, second full paragraph.

However, as discussed during the interview, Izumi does not teach or suggest a timing for detecting an intensity of a reflection light from each of the recording marks, and that timing being different than a timing for detecting an edge of a recording mark, as recited in independent Claims 4 and 16. The outstanding Office Action asserts in the paragraph bridging pages 5 and 6 that the *trailing edge* detecting data signal 8 of Izumi corresponds to detecting the *intensity* of a reflection of light. However, Applicants respectfully submit the trailing edge detecting data signal 8 and the detecting of the intensity of the reflection light signal are different.

Horibe shows in Figures 17A-D various signals that are asserted in the outstanding Office Action at page 6, first full paragraph, as corresponding to the features of Claims 4 and 16. However, as discussed during the interview, Horibe does not teach or suggest a timing for detecting a mark edge, a timing for detecting an intensity of a reflection light, and the two timings being different, as recited in Claims 4 and 16. On the contrary, Horibe states at column 2, lines 4-8, referring to Figures 17A-D, that “a synchronizing section 6 synchronizes the digitized signal (FIG. 17C) with the synchronized clock signal (FIG. 17D).” Thus, the signals shown in Figures 17A-D are synchronized and not different as recited in Claims 4 and 16.

Accordingly, neither of the applied art teaches or suggests different timings for detecting a mark edge and an intensity of a reflection light of a recording mark. Thus, Applicants respectfully submit that independent Claims 4 and 16 and each of the claims depending therefrom patentably distinguish over Kobayashi, Izumi, and Horibe, either alone or in combination.

Claims 5, 9, 17, and 21 were rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi, Izumi, and Nagaai. That rejection is respectfully traversed.

The outstanding Office Action relies on Nagaai for teaching a reproducing laser beam having a smaller beam diameter than a beam diameter of a recording laser beam. However, Nagaai does not cure the deficiencies of Kobayashi and Izumi discussed above. In addition, Claims 5, 9, 17, and 21 dependent from independent Claims 4 and 16, which are believed to be allowable as noted above. Accordingly, it is respectfully submitted that Claims 5, 9, 17, and 21 are also allowable.

Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi and Iwasaki. That rejection is respectfully traversed.

The outstanding Office Action relies on Iwasaki for disclosing a laser beam having a power level modified into three power levels. However, Iwasaki does not cure the deficiencies of Kobayashi discussed above. In addition, Claim 14 depends from independent Claim 10, which is believed to be allowable as noted above. Accordingly, it is respectfully submitted that dependent Claim 14 is also allowable.

Claim 23 was rejected under 35 U.S.C. § 103(a) as unpatentable over Kobayashi and Kasami. That rejection is respectfully traversed.

The outstanding Office Action relies on Kasami for teaching various features of dependent Claim 23. However, Kasami does not cure the deficiencies of Kobayashi discussed above. In addition, Claim 23 depends from independent Claim 22, which is believed to be allowable as noted above. Accordingly, it is respectfully submitted that dependent Claim 23 is also allowable.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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